

## **DETAILED ACTION**

1. Claims 3-5, 8-10, 13-15, 18-22, 25 & 31-33 are pending in the application.
2. Claims 1-2, 6-7, 11-12, 16-17, 23-24 & 26-30 have been canceled.

### ***Response to Amendment***

3. Applicant's arguments with respect to claims 3-5, 8-10, 13-15, 18-22, 25 & 31-33 have been considered but are moot in view of the new ground(s) of rejection.
4. The Examiner would like to apologize for providing improper guidance regarding the allowability of the application during the telephone interview on 09/05/2008.

### ***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.
6. Claims 21-22 & 31-33 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sklar (Digital Communications; Chapter 1, Section 1.6, Pages 30-33; Copyright 1988).

In regards to Claims 21-22, Sklar discloses a method for performing a channel impulse response comprising receiving a time domain signal (Fig. 1.9, element y(t)) wherein the received signal is a circular convolution (Page 31, Eq. 1.46) of the transmitted signal (Fig. 1.9 & Eq. 1.46, element x(t)) and the channel impulse response (Fig. 1.9 & Eq. 1.46, element h(t)). Sklar further discloses presenting the received signal in the frequency domain (Fig. 1.9 & Eq. 1.48, elements X(f), H(f),

$Y(f)$ ) by performing fourier transform (Page 31, Section 1.6.2). Sklar further discloses computing the channel impulse response in the frequency domain by dividing the received signal (Eq. 1.49, element  $Y(f)$ ) with the transmitted signal (Eq. 1.49, element  $X(f)$ ). However, Sklar does not explicitly disclose performing an inverse fourier transform to estimate the impulse response and further performing a (inverse) fast fourier transform (FFT) / (IFFT) to go from time domain to frequency domain and further does not explicitly disclose a midamble. However, it would have been obvious to one of ordinary skill in the art at the time of the invention that FFT/IFFT performs frequency domain and time domain computations and further a convolution in time domain is a multiplying in the frequency domain. Furthermore, it would have been obvious to one of ordinary skill in the art at the time of the invention that it is common to transmit a midamble (training sequence) to determine the channel estimation. Furthermore, it is inherent in FFT and IFFT to be exchangeable as recited in claim 22.

In regards to Claim 31-33, Furthermore, it would have been obvious to one of ordinary skill in the art at the time of the invention to implement channel estimation in a receiver and further a wireless transceiver in a base station so as to be able to reliably receive the transmitted data.

7. Claims 25 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sklar (Digital Communications; Chapter 1, Section 1.6, Pages 30-33; Copyright 1988) in view of Eidson (2004/0047284).

In regards to Claim 25, Sklar discloses a method for performing a channel impulse response as described above. However, Sklar does not disclose the FFT is extended to a proper length.

Eidson discloses a wireless communications receiver (Fig. 11). Eidson further discloses receiving a reference signal of variable length (Paragraphs 122-124). Eidson further discloses extending the FFT to a desired length "L" for more efficient computation (Paragraph 125). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention that Eidson teaches extending the FFT to a desired length "L" for more efficient computation and this is implemented in the system as described in the AAPA so as to be able to vary the pilot (training) sequence depending on the channel conditions and the desires accuracy of the channel estimate.

***Allowable Subject Matter***

8. Claims 3-5, 8-10, 13-15 & 18-20 are allowable over the Prior Art of Record.

***Conclusion***

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to SUDHANSU C. PATHAK whose telephone number is (571)272-5509. The examiner can normally be reached on 9am-5pm. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chieh M. Fan can be reached on 571-272-3042.

The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Sudhanshu C Pathak/  
Primary Examiner, Art Unit 2611